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## Alaska Region News Release

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[www.nps.gov/akso/nature/science/landscape\\_study.cfm](http://www.nps.gov/akso/nature/science/landscape_study.cfm)

### **New study gives “big picture” of Denali’s landscape and its potential response to climate change**

FAIRBANKS, AK— An article in the current issue of *Ecological Monographs* provides new insights about the trees in Denali National Park’s vast, open landscape and how changes in climate may translate to changes across interior Alaska.

The article summarizes work by scientists with the National Park Service’s Inventory and Monitoring program. They examined over 1100 study plots in a 4.5 million-acre area of Denali National Park across 10 years to describe forest communities and draw connections between tree species, habitat, and environmental characteristics. The researchers then used their extensive set of results to evaluate several common hypotheses on how forests of the north will respond to climate change. The result is a study of unprecedented scale that paints an objective picture of the diversity of the landscape and sets the stage for tracking future changes in interior Alaska.

In contrast to some previous studies, the authors report that white spruce (*Picea glauca*) may respond favorably to warming conditions by increasing in abundance and distribution by expanding into newly thawed terrain. In addition, this study reports no current evidence for a large-scale shift from spruce to broadleaf forests in the lowlands of Denali National Park, where coniferous forests still dominate the landscape.

“We now have a solid baseline from which to measure changes and just as importantly, the causes of those changes,” said Carl Roland, biologist with the National Park Service and lead author on the article. “The effects of climate change can already be seen in Alaska, and this study demonstrates the value of long-term monitoring programs to our collective knowledge about these vast areas.” Roland added that “identical large-scale vegetation studies to the one in Denali are occurring in other Alaska parks, further expanding our understanding of Alaska’s natural landscapes and how they may change over time.”

Alaska’s interior is part of the boreal forest—the largest land biome on earth. These forests, which occur in the northern portions of North America, Europe and Asia, are expected to undergo major shifts as a result of climate change. Over such a large area, even slight shifts in the distribution of species can result in major changes to the northern forests of the world. Monitoring these forests on a large scale is crucial for informing scientists and natural resource managers on how to adapt to and mitigate these changes.

The Central Alaska Inventory and Monitoring Network is a program of the National Park Service tasked with monitoring the status and trends of select “vital signs” to track the overall health of ecosystems within national parks over time. For more information, go to <http://www.nps.gov/akso/nature>.

The full article describing this study is freely accessible through the Ecological Monographs website.

Roland, C. A., Schmidt, J. H., and Nicklen, E. F. 2013. Landscape-scale patterns in tree occupancy and abundance in subarctic Alaska. *Ecological Monographs*: 83 (1): pp. 19–48.

Open access article (available as pre-print): <http://www.esajournals.org/doi/pdf/10.1890/11-2136.1>

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